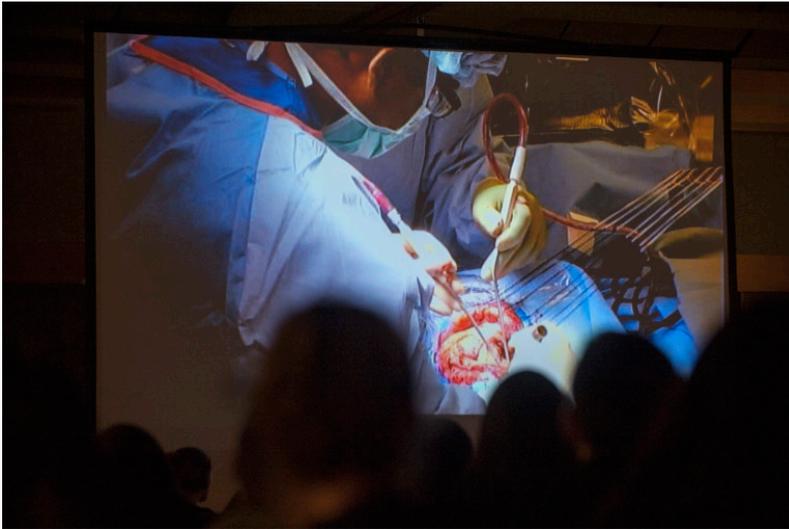


Skyview, Fort Vancouver students observe brain surgery

Rare look at aneurysm procedure comes in real time via video



(<http://www.columbian.com/wp-content/uploads/2016/01/664791-brain-surgery-kids4.jpg>)

Seven students from Skyview and Fort Vancouver high schools were among 190 students who observed a live brain surgery via video Jan. 13 at Providence St. Vincent Medical Center in Portland. (Natalie Behrinda/ The

By **Susan Parrish** ([/author/sparrish](#)),
Columbian Education Reporter
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Providence School Outreach Program

• **What:** Eight to 10 surgical-viewing educational programs are offered annually including Brain Watch, Heart Watch (open-heart surgery), Chest Watch (thoracic surgery) and Ortho Watch (orthopedic surgery, usually total hip or knee replacement). About 200 students view real-time surgery on a big screen in Souther Auditorium at Providence St. Vincent Medical Center, 9205 S.W. Barnes Road, Portland.

• **Contact:** Julianne Sandoz, director, Providence School Outreach at 503-893-7471

• **Website:**
www.providence.org/schooloutreach
(<http://oregon.providence.org/our-services/p/providence-school->

PORTLAND — Andrew Todd sat among a sea of other high school students in the Souther Auditorium at Providence St. Vincent Medical Center in Portland. His eyes were glued to the enormous screen, where a neurosurgeon was in the midst of removing an aneurysm. The glistening brain pulsed in a steady rhythm.

"Why is the brain moving?" asked the Fort Vancouver High School sophomore.

"The brain moves for two reasons. When you have a pulse and when there is a change in respiration," answered Braidon Freeman, a physician assistant standing in the auditorium.

Andrew was part of a group of seven students from Fort Vancouver and Skyview high schools who watched a brain surgery live on Jan. 13. The Vancouver students were among 190 high school students and their teachers from the Portland metro area who observed the real-time brain surgery.

Brain Watch, an educational outreach program offered by Providence Health & Services, is one of several live surgeries conducted annually at Providence St. Vincent and Providence Portland hospital that allows high school students in science and health occupations classes to observe and ask questions of the surgeon and hospital's other medical staff. Heart, orthopedic and thoracic surgeries also are viewed by students, said Julianne Sandoz, director of Providence School Outreach.

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NW NOGGIN

• **What:** Northwest Neuroscience Outreach Group: Growing in Networks is a creative and largely volunteer effort to bring scientists, artists and students of all ages together to share their expertise, enthuse middle and high-school students about neuroscience, leverage area educational resources, and inform and excite the public about ongoing research.

• **Next free public event:** John Harkness, a postdoctoral student in neuroscience at WSU Vancouver, and artist Kindra Crick, granddaughter of Francis Crick, who helped discover the double helical structure of DNA, will discuss memory, art and genes from 6 to 8 p.m. Jan. 27 at Velo Cult, 1969 N.E. 42nd Ave., Portland.

• **Contact:** Teachers who would like their students to participate in NW Noggin neuroscience activities should email aspragus@yahoo.com (<mailto:aspragus@yahoo.com>) or bgriesar@gmail.com (<mailto:bgriesar@gmail.com>)

• **Website:** <http://nwnoggin.org> (<http://nwnoggin.org>)

Bill Griesar, a Washington State University Vancouver neuroscientist and co-founder of the educational nonprofit NW NOGGIN, organized the Vancouver students' participation.

About an hour earlier, the screen blazed to life with images of the operating room in real time. Expertly wielding a drill, neurosurgeon Dr. Vivek Deshmukh bent over the patient.

Freeman, the physician assistant explained what was happening: "They've made an incision through the scalp. They're starting to peel away the scalp. Suction tubing is keeping the area clear."

Freeman pointed out the sounds in the operating room: the suction machine, monitors, the drill cutting through the skull.

"He's making a nickel-to-dime-sized hole in the skull," Freeman said. "If anyone gets queasy, put your head down or look away."

But no one tossed their cookies. Some students munched granola bars and string cheese as they watched.

Suddenly, a camera zoomed in on the surgeon's hands as he used bone wax to stop the bleeding. Oohs and aahs filled the auditorium. The physician assistant in the operating room tied the sutures quicker than a basketball player ties errant shoelaces on the court.

Freeman, the physician assistant in the auditorium, shared how he perfected tying sutures: "I'd bring a pack of sutures home at night and practice tying sutures around the coffee table leg. Tie a suture, tie a suture. After you've tied about a thousand sutures, you get the hang of it."

In the operating room, the neurosurgeon tapped a hammer to remove another piece of bone. Through the physician assistant, the students asked questions of the surgeon as he worked. A student asked what happens to all those pieces of bone being removed. They are wrapped in sponges and later returned to the patient's skull, Freeman told them.

"What do you do with all the blood?" Andrew asked.

There's technology to re-transfuse the patient's blood back into the patient, depending on the volume of blood lost, Freeman answered.

"The shine on the brain is the arachnoid mater," Freeman said, pointing a laser at the screen. "Under a microscope, it looks like a spider web."

The surgeon, who could hear Freeman's dialogue with the students, pointed to glistening tissue and said: "This is the arachnoid we talked about. That dark, wispy layer."

The arachnoid mater is the middle of three layers that make up the meninges, or membranes, that surround the spinal cord and brain, according to Laser Spine Institute.

It was the first time Griesar of WSUV and NW NOGGIN had arranged a brain surgery. He had never observed one before and said he was surprised that "brain surgery is like home improvement. There are drills and saws, screws and hammers, lots of mess and wrenching of bone and flesh. The procedure we watched — aneurysm clipping — involved sealing off two weakened, ballooning parts of a blood vessel. They repaired plumbing! We are physical. Our desires, dreams, perceptions and memories rely on strikingly physical hardware, and our lives can depend on skilled handiwork."

The high school teachers and students spoke highly about the experience. Seamus Shalman, a science teacher at Fort Vancouver High School, said observing the brain surgery could be tied to everything he's teaching in biology.

"From brain cells, to stem cells, to neurons and nerves — this experience gave students a hands-on, in-depth perspective on how vital specialized cells are to the function of an organized system, as well as a real-world example as to how one malfunction in the system can lead to something like a brain aneurysm," Shalman said.

"My students were completely riveted by the scale of what they were witnessing," Shalman added. "The tools that the surgeons used were so small and they had to be so precise because of all of the anatomical components around the aneurysm. I think seeing this process up close really surprised them because there was so much skill and precision involved throughout the whole process."

Angela Fojtik, a biology and environmental science teacher at Skyview High, said, "My students were surprised that they could ask questions directly to the surgeon through a microphone during the surgery and that he answered them."

Her students had just learned about the structure and function of specialized cells, including neurons.

"It was pretty neat for my students to be able to see the different tissues in the brain and know that the cells comprising each tissue would have a different shape based on its particular function," she said.

Before the surgery began, several Providence St. Vincent medical staff members spoke to the students about their particular job at the hospital. These included the neurosurgeon, a physician assistant, nurse practitioner, physical therapist and MRI technician.

When students and teachers complete an evaluation at the end of the surgery "many say it's been totally life-changing."

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Sandoz, of Providence, said.

"Our students were riveted by the experience," Griesar said. "We were so impressed with the many sharp, informed questions they asked during the surgery."

All seven of the Vancouver students plan to pursue health care careers. Skyview's Noah Tukhashvili, a 10th-grader who volunteers at Legacy Salmon Creek Medical Center, wants to be a neurosurgeon. Vanessa Turner, a junior, wants to be a cardiothoracic surgeon. Ivan Villalobos, a sophomore, is unsure which medical field he wants to pursue.

Fort Vancouver's Talia Stacy, a 10th-grader, plans to become a neurosurgeon. Odalis Seefoo, a freshman, wants to pursue a career as a forensic anthropologist. Isabel Henkes, also a freshman, wants to be a veterinarian. Todd, a sophomore, wants to pursue dual careers as a nurse and graphic artist.

It was the first time NW NOGGIN took students to observe a live surgery, but Griesar said it won't be the last.

"We'd love to approach OHSU (hospital) and PeaceHealth (Southwest Medical Center) to see if they'd like to organize similar educational events," he said.

"I was struck by how different the living brain is from the formalin-fixed cadaver brains we bring to schools," he added. "This may sound obvious, but life makes a palpable difference. The living brain moves visibly. It pulses from changes in blood pressure. It glistens, blushes — and it's beautiful, unmistakably complex and clearly vulnerable. This was a gripping experience."



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Susan Parrish

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Sheila May Avery

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